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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/501,482	08/16/2004	Bjorn Paulshus	4566-0107PUS1	2371
2292	7590	04/06/2006	EXAMINER	
BIRCH STEWART KOLASCH & BIRCH PO BOX 747 FALLS CHURCH, VA 22040-0747			MILLS, DANIEL J	
			ART UNIT	PAPER NUMBER
			3679	

DATE MAILED: 04/06/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No. 10/501,482	Applicant(s) PAULSHUS, BJORN	
	Examiner Daniel J. Mills	Art Unit 3679	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 11 January 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,2 and 6-16 is/are rejected.
- 7) ☒ Claim(s) 3, 4, and 5 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 January 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)             | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date: _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date: _____  | 6) <input type="checkbox"/> Other: _____                                    |

### **DETAILED ACTION**

The indicated allowability of claim 14 is withdrawn in view of Paulshus et al (WO 02/057560). Rejections based on the reference follow.

The abstract of the disclosure is objected to because the language "is disclosed" is implied and must be deleted. Correction is required. See MPEP § 608.01(b).

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 8, 9, and 14 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claim 8, the phrase "between the embracing element ... in a substantially natural direction towards and into the apertures of the receiving body" is unclear because the "natural direction" is not defined.

Regarding claim 9, the phrase "the receiving body acts as a gathering element for the strands between the embracing element and the terminating sleeve" it is unclear how the receiving body acts between itself and another element.

Regarding claim 14, it is unclear what the phrases "radially outer surface" and "radially inner surface" mean.

Claims 14 recites the limitation "respective embracing connecting parts" in line 4. There is insufficient antecedent basis for this limitation in the claim.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-3, 8-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Paulshus et al. (Paulshus '560 - WO 02/057560) in view of Dufosse (US 3,967,421).

Regarding claims 1 and 16, Paulshus '560 discloses an end termination for a tension leg, the tension leg being constructed a number strands that constitute the load carrying elements of the tension leg, the strands being twisted about the longitudinal axis of the tension leg by a predetermined laying length, each of the strands being constructed of a plurality of rods of composite material having embedded strength fibers, the rods being twisted about each other, and the strands terminate near a receiving body having connecting means and a number through-going apertures enclosing the respective strands, wherein each strand is passed through a respective aperture in the receiving body.

Paulshus '560 fails to disclose that each strand is passed through a respective aperture in the receiving body without being fixed therein, each strand has a free end terminating some distance above the receiving body, and the free end of each strand is fixed to and enclosed by a terminating sleeve having a diameter larger than a

corresponding aperture in the receiving body, the terminating sleeve is loosely resting on abutting the receiving body.

Dufosse teaches that each strand is passed through a respective aperture in the receiving body without being fixed therein, each strand has a free end terminating some distance above the receiving body (see Figure 1), and the free end of each strand is fixed to and enclosed by a terminating sleeve (7) having a diameter larger than a corresponding aperture in the receiving body, the terminating sleeve is loosely resting on abutting the receiving body. Dufosse teaches this is useful to hold the strands against the external face of the plate (column 3 line 13). Accordingly, it would have been obvious to modify the arrangement of Paulshus '560 to include that each strand is passed through a respective aperture in the receiving body without being fixed therein, each strand has a free end terminating some distance above the receiving body, and the free end of each strand is fixed to and enclosed by a terminating sleeve having a diameter larger than a corresponding aperture in the receiving body, the terminating sleeve is loosely resting on abutting the receiving body as taught by Dufosse, to hold the strands against the external face of the plate.

Regarding claim 8, Paulshus '560 in view of Dufosse results in an end termination comprising an embracing element that is spaced apart from the receiving body and keeps the strands together, that between the embracing element and the receiving body the strands extend without radial restriction and in a substantially natural direction towards and into the apertures of the receiving body.

Regarding claim 9, Paulshus '560 in view of Dufosseze results in an end termination wherein the receiving body acts as a gathering element for the strands between the embracing element and the terminating sleeve.

Regarding claim 10, Paulshus '560 in view of Dufosseze results in an end termination wherein the apertures of the receiving body are inclined relative to the longitudinal axis of the tension leg and the inclination corresponds to the natural direction of the strands between the embracing element and the terminating sleeves.

Regarding claim 11, Paulshus '560 in view of Dufosseze results in an end termination further comprising that the end to a termination comprises an external rigid sleeve fixed at one end thereof to the receiving body and in its other end to the embracing element.

Regarding claim 12, Paulshus '560 in view of Dufosseze results in an end termination wherein the receiving body on its external surface has at least one annular groove (16a) for engagement with at least one first annular rib (21a) on a connecting part (21) that is connected to a connecting point (20).

Regarding claim 13, Paulshus '560 in view of Dufosseze results in an end termination wherein the connecting point (20) has at least one external annular groove (20a) for engagement with at least one second annular rib (21b) arranged on the connecting part (21) a distance apart from the at least one first rib (21a), which connecting part is radially fixed by an upper and lower embracing connecting part (22).

Regarding claim 14, Paulshus '560 in view of Dufosseze results in an end termination further comprising an upper and lower radially outer surface (21c, 21d) on

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the connecting part has an upward directed conical form and an upper and lower radially inner surface (22) on the respective embracing connecting parts (top and bottom of 22) has complementary conical form.

Regarding claim 15, Paulshus '560 in view of Dufosseze results in an end termination further comprising that the connecting parts comprise respective pin screws (23), for temporary fixation of the connecting parts to the connecting point and the receiving body respectively.

Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Paulshus et al. (Paulshus '560 - WO 02/057560) and Dufosseze (US 3,967,421) as set forth above, and further in view of Willes (GB 2091770).

Regarding claim 2, Paulshus '560 in view of Dufosseze results in an end termination but fails to show the terminating sleeve is internally tapered in a direction towards the receiving body (toward the body of the strand as shown in Willes).

Willes (GB 2,091,770) teaches the use of a composite fiber strand rope and internally tapered end termination because the end fitting is able to transmit all the forms of tensile loading a high modulus fiber rope is able to withstand. Accordingly it would have been obvious at the time of applicant's invention to modify the arrangement of Paulshus '560 in view of Dufosseze to include an end termination as taught by Willes for the purpose of transmitting all the forms of tensile loading a high modulus fiber rope is able to withstand.

Acknowledgment is made of applicant's claim for foreign priority based on an application filed in Norway on 1/25/2002. It is noted, however, that applicant has not filed a certified copy of the foreign application as required by 35 U.S.C. 119(b).

Claims 1, 8-11, and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Daiguji et al. (Daiguji – US 2001/0039686) in view of Williams et al (Williams – 5,525,003), and Shigley & Mischke (5<sup>th</sup> edition).

Regarding claims 1 and 16, Daiguji discloses an end termination for a tension leg (figure 2), the tension leg being constructed a number strands (4) that constitute the load carrying elements of the tension leg, the strands and each of the strands being constructed of a plurality of rods (see paragraph 0028) the rods being twisted about each other (twisted wire), and the strands terminate near a receiving body (2') having connecting means and a number through-going apertures enclosing the respective strands, wherein each strand is passed through a respective aperture in the receiving body (2') without being fixed therein, each strand has a free end terminating some distance above the receiving body (see figure 8), and the free end of each strand is fixed to and enclosed by a terminating sleeve (5) having a diameter larger than a corresponding aperture in the receiving body, the terminating sleeve is loosely resting on abutting the receiving body.

Daiguji fails to disclose that the rods are composed of non-metallic materials like composite material with embedded strength fibers are twisted (laid) about the longitudinal axis of the tension leg by a predetermined laying length.



Williams teaches the use of a composite fiber cables for their high strength to weight ratio. Accordingly, it would have been obvious at the time of applicant's invention to modify the arrangement of Daiguji to include a composite fiber cable as taught by Williams for the purpose of utilizing strong light composite cable with a high strength to weight ratio.

Shigley & Mischke (S-M) teaches the use of a Lang-lay pattern for resistance to abrasive wear and fatigue failure. Accordingly it would have been obvious at the time of applicant's invention to modify the arrangement of Daiguji in view of Willes to include a Lang-lay pattern for resistance to abrasive wear and fatigue failure.

Regarding claim 8, Daiguji in view of Williams, and S-M results in an end termination comprising an embracing element (see figure 2, the embracing element guides the strands more closely together) that is spaced apart from the receiving body and keeps the strands together, that between the embracing element and the receiving body the strands extend without radial restriction and in a substantially natural direction towards and into the apertures of the receiving body (as shown in figure 2).

Regarding claim 9, Daiguji in view of Williams, and S-M, results in an end termination wherein the receiving body acts as a gathering element for the strands between the embracing element and the terminating sleeve (see figure 2).

Regarding claim 10, Daiguji in view of Williams, and S-M, results in an end termination wherein the apertures of the receiving body are inclined relative to the longitudinal axis of the tension leg (shown in figure 8) and the inclination corresponds to

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the natural direction of the strands between the embracing element and the terminating sleeves.

Regarding claim 11, Daiguji in view of Williams, and S-M, results in an end termination further comprising that the end to a termination comprises an external rigid sleeve (1) fixed at one end thereof to the receiving body and in its other end to the embracing element.

Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Daiguji et al. (Daiguji – US 2001/0039686), Williams et al (Williams – 5,525,003), Shigley & Mischke (5<sup>th</sup> edition), as set forth, above, and further in view of Willes (GB 2,091,770).

Regarding claim 2, Daiguji in view of Williams and S-M result in an end termination but fail to show the terminating sleeve is internally tapered in a direction towards the receiving body.

Willes (GB 2,091,770) teaches the use of a composite fiber strand rope and internally tapered end termination because the combination of the high-modulus plastic fiber rope and end termination is able to withstand high tensile loading forces with low weight. Accordingly, it would have been obvious at the time of applicant's invention to modify the arrangement of Daiguji, Williams, and S-M to include a composite rope and end termination as taught by Willes for the purpose of utilizing strong light composite plastic fiber rope that minimizes weight and maximizes load carrying capacity.

Claims 12, 13, and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Daiguji et al. (Daiguji – US 2001/0039686) in view of Williams et al.

(Williams – US 5,525,003) and Shigley & Mischke (5<sup>th</sup> edition) as set forth in claims 1-5, 8-11, above, and further in view of Dufossez (US 3,967,421).

Regarding claim 12, Daiguji in view of Williams and S-M disclose an end termination as claimed but fail to disclose that the receiving body on its external surface has at least one annular groove for engagement with at least one first annular rib on a connecting part that is connected to a connecting point.

Dufossez teaches the use of a receiving body (6) that on its external surface has at least one annular groove (threading) for engagement with at least one first annular rib (threading on 8) on a connecting part (8) that is connected to a connecting point (at 9), for the purpose of allowing an adjustment of length of the end termination to adjust tension in the cable. Accordingly it would have been obvious at the time of applicant's invention, to modify the arrangement of Daiguji in view of Willes and S-M to include a receiving body that on its external surface has at least one annular groove for engagement with at least one first annular rib on a connecting part that is connected to a connecting point as taught by Dufossez for the purpose of allowing an adjustment of end termination length.

Regarding claim 13, Daiguji in view of Williams and S-M and Dufossez results in an end termination characterized in that the connecting point (at 9, Dufossez) has at least one external annular groove (threading on 8, Dufossez) for engagement with at least one second annular rib (on 9, Dufossez) arranged on the connecting part a distance apart from the at least one first rib (at the connection of 8 and 6, Dufossez),

which connecting part (9, Dufossez) is radially fixed by an upper (26) and lower (10) embracing connecting part.

Regarding claim 15, Daiguji in view of Williams and S-M and Dufossez results in an end termination characterized in that the connecting parts comprise respective pin screws (shown in Daiguji Figure 2), for temporary fixation of the connecting parts to the connecting point and the receiving body respectively.

Claims 6 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Daiguji et al. (Daiguji – US 2001/0039686) in view of Williams (US 5,525,003) and Shigley & Mischke (5<sup>th</sup> edition) as set forth above, and further in view of Alznauer et al. (Alznauer – US 2002/0121390).

Regarding claims 6 and 7, Daiguji in view of Williams and S-M disclose an end termination as claimed but fails to disclose that each aperture through the receiving body terminates in a concentric recess for receipt of and to act as a guide and seat for the terminating sleeve, and that each recess has a depth that is longer than the distance that a terminating sleeve is able to move out of the receiving body.

Alznauer teaches the use of a bushing (11) that guides a cable (5) in an aperture (through which 11 passes) through a receiving body (1) and terminates in a concentric recess (the opening encompassed by 1) for receipt of and to act as a guide and seat for the terminating sleeve (11), and that each recess has a depth that is longer (the height of 1) than the distance that a terminating sleeve is able to move out of the receiving body. Alznauer teaches the use of this bushing to protect the cable. Accordingly it would have been obvious at the time of applicant's invention to modify the arrangement

of Daiguji in view of Williams and S-M to include a bushing as taught by Alznauer for the purpose of protecting the cable.

***Allowable Subject Matter***

Claims 3, 4, and 5 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 3, 4, and 5 would be allowable because the prior art fails to disclose or suggest an end termination means with a guiding sleeve which is a separate element from the receiving body, in combination with all other limitations.

***Response to Arguments***

Applicant's arguments, filed 1/11/2006, with respect to the rejection(s) of claim(s) 1-13,15 under Section 103 have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Daiguji et al. in view of Willes, Williams, and Shigley & Mischke (5<sup>th</sup> edition). A new ground(s) of rejection is also made in view Paulshus et al. - WO 02/057560 in view of Dufossez.

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**Conclusion**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daniel J. Mills whose telephone number is 571-272-8115. The examiner can normally be reached on M-F 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Daniel P. Stodola can be reached on 571-272-7087. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

DJM

DJM  
3/28/2006

  
**James R. Brittain**  
**Primary Examiner**